

# **TDE3237**

## INTELLIGENT POWER SWITCH

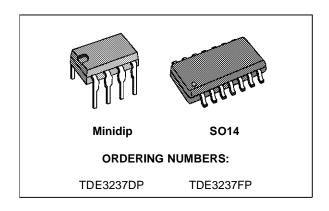
**ADVANCE DATA** 

- HIGH OUTPUT CURRENT
- ADJUSTABLE SHORT-CIRCUIT PROTECTION
- INTERNAL THERMAL PROTECTION WITH HYSTERESIS TO AVOID THE INTERMEDI-ATE OUTPUT LEVELS
- LARGE SUPPLY VOLTAGE RANGE: 8 TO 30V

#### **DESCRIPTION**

The TDE3237 is a monolithic amplifier designed for high-current and high-voltage applications, specially to drive lamps, relays and stepping motors.

The device is essentially blow-out proof. Current limiting is available to limit the peak output current to a safe value, the adjustment only requires one external resistor. In addition, thermal shut down is provided to keep the IC from overheating. If external dissipation becomes too great, the driver will

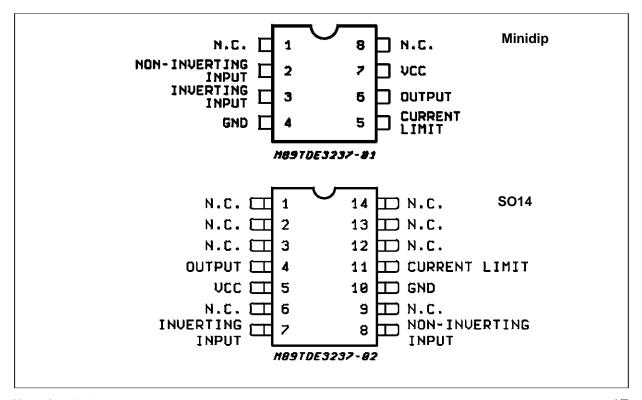


shut down to prevent excessive heating.

The output is also protected from short-circuits with the positive power supply.

The device operates over a wide range of supply voltages from standard ±15V operational amplifier supplies down to the single 12V or 24V used for industrial electronic systems.

#### **PIN CONNECTIONS**



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#### **ABSOLUTE MAXIMUM RATINGS**

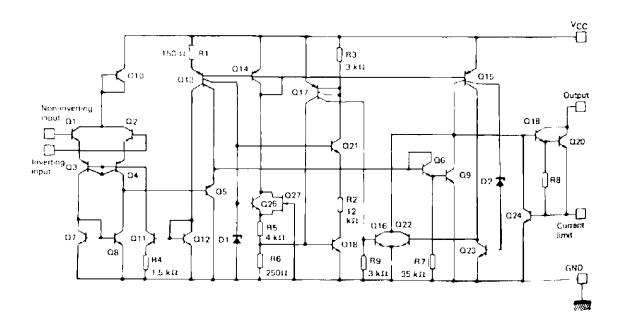
Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	36	V
V <sub>ID</sub>	Differantial Input Voltage	36	V
VI	Input Voltage	36	V
lo	Output Current	500	mA
P <sub>tot</sub>	Power Dissipation	Internally Limited	W
T <sub>stg</sub>	Storage Temperature Range	- 65 to + 150	°C
T <sub>oper</sub>	Operating Free-air Temperature Range	- 25 to + 85	°C

#### THERMAL CHARACTERISTICS

Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Maximum Junction-case Thermal Resistance (note 1)	Minidip	50	°C/W
R <sub>th(j-a)</sub>	Maximum Junction-ambient Thermal Resistance (note 1)	Minidip	120	°C/W
	Junction-ceramic Substrate (case glued to substrate)	SO14	90	°C/W
	Junction-ceramic Substrate (case glued to substrate, substrate temperature maintened constant)	SO14	65	°C/W

Note: 1. Devices bonded on 40 cm glass-epoxy printed circuit 0.15cm thick with 4cm² of copper

#### **SCHEMATIC DIAGRAM**



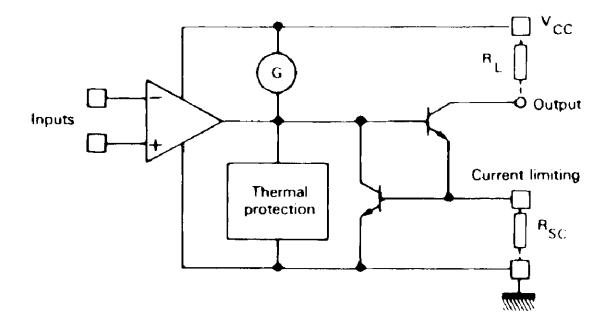
**ELECTRICAL CHARACTERISTICS**  $T_{amb} = -25$  to +85 °C,  $V_{CC} = 8$  to  $\leq 30$  V, unless otherwise specified (note 1).

Symbol	Parameter	Min.	Тур.	Max.	Unit
V <sub>IO</sub>	Input Offset Voltage - (note 3)	_	2	50	mV
I <sub>IB</sub>	Input Bias Current		0.1	1.5	μΑ
Icc	Supply Current ( $V_{CC} = + 24 \text{ V}, I_{O} = 0$ )	_	3	5	mA
V <sub>CM</sub>	Common-mode Input Voltage Range	2	ı	V <sub>CC</sub> -2	V
I <sub>SC</sub>	Short-circuit Current Limit ( $T_{case} = +25  ^{\circ}\text{C}, \ R_{SC} = 3.3  \Omega$ )	_	230	1	-mA
V <sub>CC</sub> -V <sub>O</sub>	Output Saturation Voltage (output high) (R <sub>SC</sub> = 0, $V_1+-V_1- \ge 50$ mV, $I_0 = 150$ mA	_	1	1.5	V
loL	Low Level Output Current (V <sub>O</sub> = V <sub>CC</sub> = + 24 V T <sub>amb</sub> = + 25 °C)		_	100	μΑ

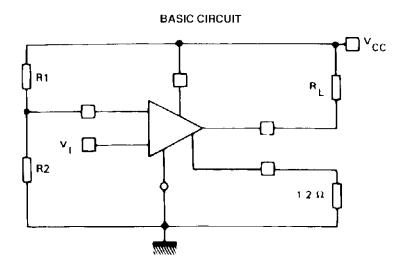
#### Notes:

- 2) For operating at high temperature, the TDE3237, must be derated based on a + 150 C maximum junction temperature and a junction-ambient thermal as showed in the thermal characteristics data base.
- 3) The offset voltage given is the maximum value of input voltage required to drive the output voltage within 2 V of the ground or the supply voltage.

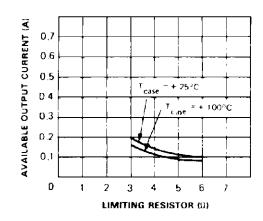
#### SIMPLIFIED SCHEMATIC



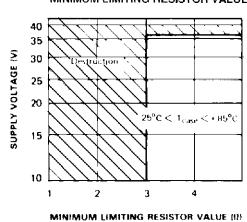
#### TYPICAL APPLICATION



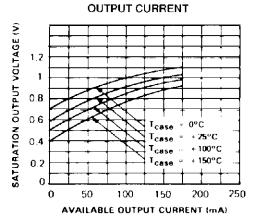
# AVAILABLE OUTPUT CURRENT VERSUS LIMITING RESISTOR



# SUPPLY VOLTAGE VS MINIMUM LIMITING RESISTOR VALUE

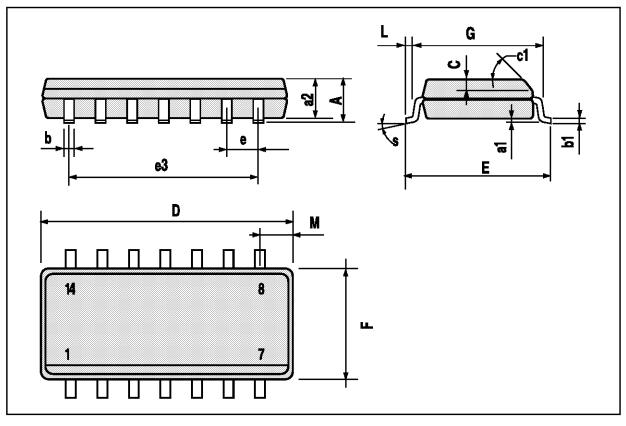


# SATURATION OUTPUT VOLTAGE VERSUS CASE TEMPERATURE AND AVAILABLE



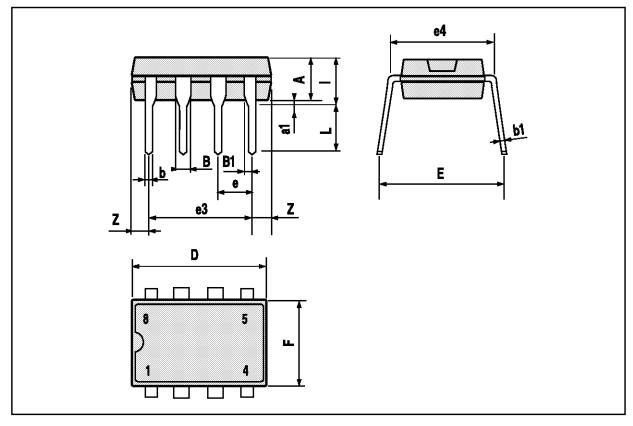
## **SO14 PACKAGE MECHANICAL DATA**

DIM.		mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А			1.75			0.069	
a1	0.1		0.25	0.004		0.009	
a2			1.6			0.063	
b	0.35		0.46	0.014		0.018	
b1	0.19		0.25	0.007		0.010	
С		0.5			0.020		
c1			45	(typ.)			
D	8.55		8.75	0.336		0.344	
E	5.8		6.2	0.228		0.244	
е		1.27			0.050		
e3		7.62			0.300		
F	3.8		4.0	0.15		0.157	
L	0.4		1.27	0.016		0.050	
М			0.68			0.027	
S		8 (max.)					



### MINIDIP PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
Α		3.32			0.131	
a1	0.51			0.020		
В	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
Е	7.95		9.75	0.313		0.384
е		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
I			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060



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